CONTRIBUTIONS TO PALÆONTOLOGY

III

A PLIOMASTODON SKULL FROM THE THOUSAND CREEK BEDS, NORTHWESTERN NEVADA

By Chester Stock

With one plate

Issued July 10, 1936

A PLIOMASTODON SKULL FROM THE THOUSAND CREEK BEDS, NORTHWESTERN NEVADA

INTRODUCTION

Mastodon remains are not uncommon in the Thousand Creek Pliocene beds of northwestern Nevada but the materials found thus far represent fragmentary and isolated specimens. Merriam [1] recorded the available specimens in 1911, including an incomplete skull which, unfortunately, was also poorly preserved. Because of lack of better material, determination of the mastodons has been unsatisfactory. Further collecting in these deposits in recent years by a field party of the California Institute of Technology yielded an incomplete skull. This specimen, found by Charles L. Gazin, furnishes an adequate basis for determining the relationships of the mastodon type occurring in the Thousand Creek fauna.

Pliomastodon nevadanus n. sp.

Type specimen—No. 1922 Calif. Inst. Tech. Coll. Vert. Pale., an incomplete skull representing most of the palate. The dentition includes the second and third superior molars of each side and a complete right tusk.

Specific characters—*Pliomastodon nevadanus* is a small species, distinctly smaller than the Pleistocene American mastodon, *Mammut americanum*. It is likewise considerably smaller than *Pliomastodon vexillarius*. Tusk devoid of enamel and lacks the curvature seen in *M. americanum*. Cheek-teeth without cement. M2 with three transverse crests; M3 with four transverse crests and a rudimentary fifth crest.

Locality—Thousand Creek beds, Thousand Creek basin, approximately 4 miles northwest of the Hot Spring and on east side of Railroad Ridge, Humboldt County, Nevada.

Description of Material

The skull, No. 1922, evidently of a young adult, is shown in Plate 1, figures 1, 1a. The emergence of M3 is not complete, but the characters of the crests in the posterior part of this tooth can be readily discerned. The anterior rim of the posterior nares lies opposite the fourth crest in M3. The palate between the third molars is narrow. Along the median line in this region extends a crest, which is thickened near the narial border and thins in its anterior extent. The posterior palatine foramen is situated on a level with the posterior crest of M2. In front of the second molar, the boundary between the palatal and lateral face of the skull is well defined and swings inward in its forward course, outlining a narrow space between it and the median line. The outward swing of this border near its forward end is not so pronounced as in the Pleistocene *Mammut*, and the distance

[1] J. C. Merriam, Univ. Calif. Pub., Bull. Dept. Geol., vol. 6, pp. 271-272, pl. 33, 1911.

between the forward end of M2 and the forward end of the skull is noticeably greater in the Thousand Creek specimen than in the latter genus.

In side view (fig. 1a) the tusk shows a nearly straight course, in which respect the Thousand Creek species differs from the North American Pleistocene mastodon. In the latter the tusk has a distinct curvature. No. 1922 differs likewise from *Pliomastodon vexillarius,* in which type the tusks give evidence of upward curvature and these teeth exhibit wider divergence near their base.

Viewed from below (fig. 1) the tusk shows only slight curvature in its forward course. The upper surface of the tusk is worn, particularly toward the forward end where cross-sections indicate clearly that the present upper surface truncates the concentric layers of dentine. The tusk in the Thousand Creek specimen is not so large in cross-section as that in *Miomastodon merriami* from the middle Miocene Virgin Valley beds. No enamel has been recognized on the former, but the section of tusk of *M. merriami,* as illustrated by Osborn,[1] possesses a broad band of enamel.

The maxillary portion of the skull immediately in front of M2 is either not present or poorly preserved, but the position of the border separating palate from lateral wall of skull makes it reasonably certain that M1 was absent. Loss of this tooth must therefore have occurred relatively early since M2 exhibits only moderate wear of crown. M2 is longer and narrower than the comparable tooth in *Mammut.* The crests are of moderate height and each consists of a transversely elongate cusp. A simple fold of the enamel extends forward from the outer anterior side of the inner cusp. The cingulum is best developed along the outer side of the first crest and on the posterior border of the crown. A small tubercle is present on the posterior cingulum behind the middle of the outer cusp. In M3 the crown possesses four cross ridges and a small heel consisting of two subequal cusps. The ridges are not so sharply crested as in *Mammut* and the small tubercles lying between the two principal cusps of each unworn ridge are a little more in evidence than in the Pleistocene genus. Viewed from the outer side (Plate 1, fig. 2) the individual ridge or crest is seen to be relatively narrow in fore and aft direction. No cement is present on the tooth crowns.

In the collections of the California Institute is a cast of a right upper molar 3, No. 92 Colorado Museum of Natural History, of *Miomastodon merriami* Osborn. Evidently the specimen, from which the cast was made, belongs to the type of the species recorded from the Virgin Valley beds of northwestern Nevada. However, no mention of this particular tooth is made nor is it illustrated by Osborn in his description of *M. merriami.* This tooth is smaller than M3 of *P. nevadanus,* the fourth crest is incomplete and is followed behind by a cingulum, and the transverse crests are lower. M3 in No. 1922 differs likewise in the more advanced character of the heel from a comparable tooth which forms the type of *P. matthewi,* No. 18237 Amer. Mus., from the Upper Snake Creek beds, Nebraska.

Pliomastodon vexillarius from the Etchegoin of the Kettleman Hills, California, comes from an horizon which is apparently nearly related in age to the Thousand Creek. Unfortunately, the cheek-teeth in this specimen are broken away. It represents a larger individual than No. 1922 and differs also in more marked divergence and in curvature of the tusks.

[1] H. F. Osborn, Amer. Mus. Nov. No. 10, fig. 2 E, 1921.

Pliomastodon sellardsi resembles *P. nevadanus* in size and may be closely related specifically to the latter. It is described by Simpson [1] from the lower Pliocene Bone Valley formation, Florida, and is known only by a lower jaw.

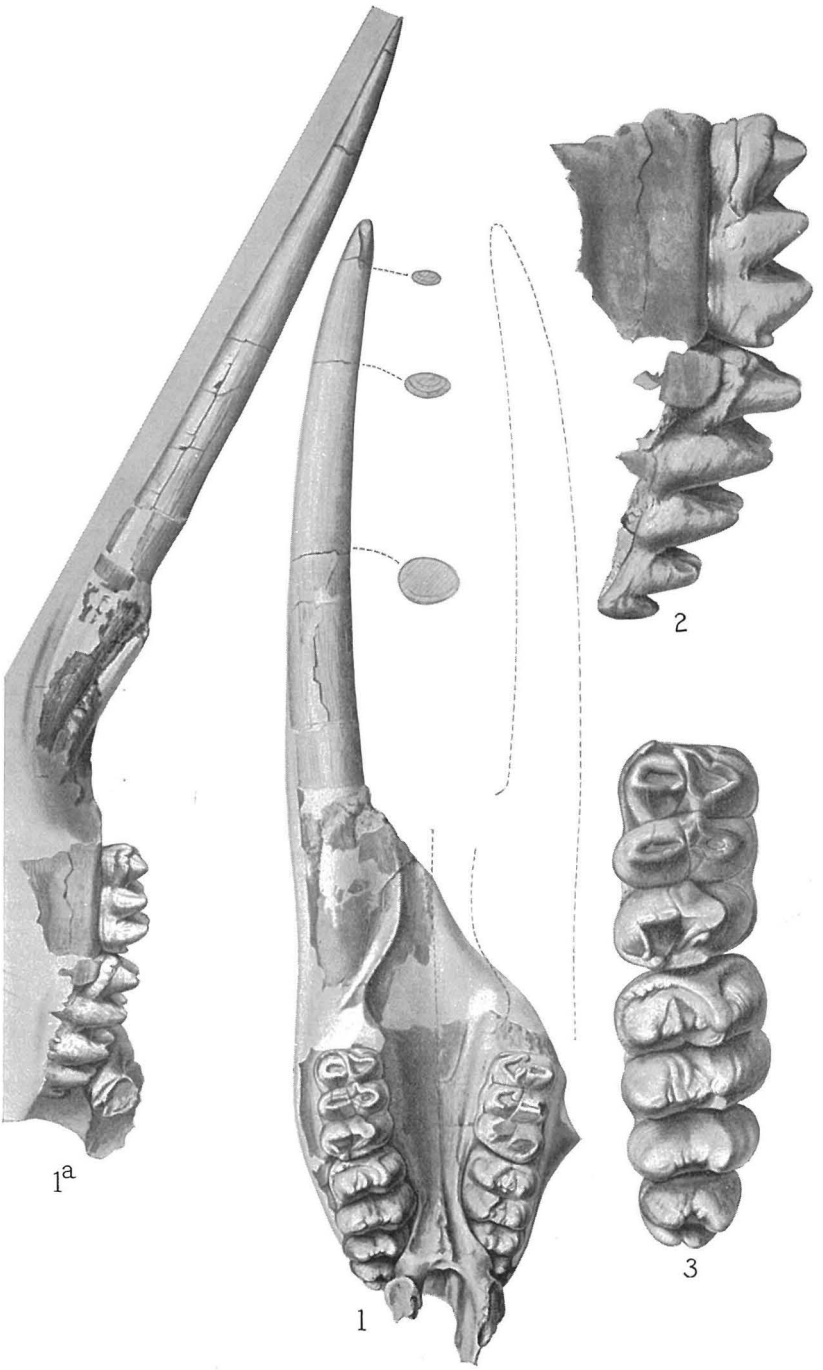
Measurements (in millimeters)

Length of tusk from tip to anterior end of skull	650
Length from anterior end of skull to posterior end of M3	500
Transverse diameter of tusk at third cross-section shown in Plate 1, fig. 1	61.4
Dorso-ventral diameter of tusk at third cross-section shown in Plate 1, fig. 1	46.8
M2, anteroposterior diameter	112
M2, transverse diameter across third crest	71.7
M2, height of third crest above valley	30
M3, anteroposterior diameter	155.6
M3, greatest transverse diameter	76
M3, height of second crest above valley	32.5

CONCLUSIONS

Although the genus *Pliomastodon* was proposed by Osborn in 1926 and its principal character defined as being an absence of lateral enamel bands on the incisor tusks, no specimen referred to this genus has been sufficiently well preserved to demonstrate the validity of this character. An incomplete skull from the Pliocene Thousand Creek beds, northwestern Nevada, possesses the superior cheek-teeth and one tusk. The latter shows no evidence of an enamel band. The specimen is described as belonging to a new species, for which the name *Pliomastodon nevadanus* is proposed. It is clearly distinct from, and more advanced than, the mastodon (*Miomastodon merriami*) from the Virgin Valley deposits.

[1] G. G. Simpson, Bull. Amer. Mus. Nat. Hist., vol. 59, art. 3, pp. 203-206, figures 30, 31, 1930.



Pliomastodon nevadanus n. sp.

Figures 1, 1a, No. 1922, incomplete skull with upper dentition (left tusk missing), inferior and lateral views; × 2/15.

Figures 2, 3, No. 1922, right M2 and M3, lateral and occlusal views; × 4/15.

California Institute of Technology Collections. Thousand Creek Pliocene, Northwestern Nevada.